

REMARKS

Claims 1-21 are pending in this application. By this Amendment, claims 5-7 are amended to address the rejection under 35 U.S.C. §112, second paragraph, the specification is amended to capitalize trademarks and tradenames located therein, and new claim 20 is added.

No new matter is added by this Amendment. Support for new claims 20 and 21 can be found throughout the specification. For example, support for new claim 20 can be found in original paragraph [0026], clearly conveying that the heat treatment of the fabric is conducted only at elevated temperature and not at, for example, elevated pressure. Support for new claim 21 can be found in original paragraph [0027], clearly conveying that the amount of water-repellent agent in the resulting fabric does not form a composite in which the yarns of the fabric are embedded in a matrix of the water-repellent agent.

Applicants appreciate the courtesies shown to Applicants' representative by Examiner Cameron in the August 24, 2005 personal interview. Applicants' separate record of the substance of the interview is incorporated into the following remarks.

I. Request for Acknowledgement of Consideration of Disclosed Information

An Information Disclosure Statement was filed on November 21, 2003. The image file wrapper available from public PAIR confirms that the Patent Office received this Information Disclosure Statement and entered the Information Disclosure Statement in the present application file.

However, a copy of the Form PTO-1449 from the Information Disclosure Statement was not initialed by the Examiner and returned to the undersigned with the June 7, 2005 Office Action. Accordingly, the Examiner is respectfully requested to initial and return the Form PTO-1449 with the next communication from the Patent Office. For the Examiner's convenience, an additional copy of the Form PTO-1449 is attached hereto.

II. Capitalization of Trademarks and Trade Names

In paragraph 11 of the Office Action, the Patent Office requested that all trademarks be capitalized wherever they appear and be accompanied by the generic terminology. Applicants have reviewed the specification, and by this Amendment have capitalized trademarks/trade names that were found therein. Applicants further submit that the original specification already included the generic descriptions of the trademarks/trade names therein.

III. Rejection Under 35 U.S.C. §112, Second Paragraph

Claims 5-7 were rejected under 35 U.S.C. §112, second paragraph. This rejection is respectfully traversed.

Regarding claim 5, the Patent Office alleged that it was not clear whether or not more than one fluoroacrylate is required. In an effort to expedite prosecution of this application, claim 5 has been amended to recite that the water-repellent agent is an agent comprising a mixture of at least two fluoroacrylate polymers.

With regard to claims 6 and 7, the Patent Office alleged that it was not clear whether or not the antistatic agent (claim 6) and lubricant (claim 7) is the same as or different from the water-repellent agent. In order to expedite prosecution of this application, claims 6 and 7 have each been amended to confirm that, as described in the specification, the antistatic agent and/or lubricant are agents separate from the water-repellent agent, but included with the water-repellent agent for application to the aramid yarn, as recited in claim 1.

For the foregoing reasons, Applicants respectfully submit that claims 5-7 are clear and definite in accordance with 35 U.S.C. §112, second paragraph. Reconsideration and withdrawal of this rejection are respectfully requested.

IV. Rejection Under 35 U.S.C. §102(b)

Claims 1, 3, 4, 7, 8 and 14 were rejected under 35 U.S.C. §102(b) as allegedly being clearly anticipated by WO 89/06190 (hereinafter Li). This rejection is respectfully traversed.

Present claim 1 recites a method for producing a hydrophobically finished aramid fabric comprising at least the steps of a) providing an aramid yarn, b) applying a water-repellent agent to the aramid yarn, c) drying the aramid yarn resulting from step b), d) forming a fabric from the aramid yarn resulting from step c), and e) heat treating the fabric.

A. Li Does Not Teach or Suggest Heat Treating the Fabric

Li describes a ballistic-resistant composite article comprising one or more layers of a network of high strength filaments in a matrix material. See the Abstract. Contrary to the assertions in the Office Action, Applicants respectfully submit that Li fails to teach or suggest the method according to claim 1.

As discussed above, present claim 1 requires a step e) of heat treating the fabric formed in step d). The Patent Office alleged that Li teaches this process step in describing the formation of composites from the high strength filaments and matrix materials. However, Applicants respectfully submit that the methods of forming composites described in Li do not teach or suggest the required heat treatment of the fabric recited in present claim 1.

At page 28, line 35 to page 29, line 17 of Li, two different techniques for forming composites from the high strength filaments and matrix materials are described. First, Li describes that a composite of more than one layer may be formed by arranging the filaments coated with the matrix material into a desired network structure, and then consolidating and heat setting the overall structure. Second, Li discloses that a composite may also be formed by arranging layers or other structures of coated or uncoated filaments adjacent to and between films of the matrix material and thereafter consolidating and heat setting the overall structure.

Li describes that the consolidation and heat setting results in the matrix material flowing into and occupying void spaces between the filaments. According to Li, the use of consolidation and heat setting causes the matrix to stick or flow without completely melting.

In Li, these composite formation methods fail to teach or suggest a step of heat treating the fabric formed from the aramid yarn. Instead, in Li, a combination of heat and pressure is used to form a composite by causing the matrix material to flow into and occupy void spaces in the composite. The techniques thus merely join together multiple fabric layers with a matrix material, and do not teach or suggest heat treating a fabric formed from aramid yarn having applied thereon a water-repellent agent.

B. New Claims 20 and 21

In an effort to further elaborate upon this significant difference between the present method and the teachings of Li, new claims 20 and 21 are added by this Amendment.

Claim 20 recites that the fabric formed in step d) is subjected only to heat treatment in step e). Li teaches a composite that, according to page 19, lines 2-5, is formed by molding the combination of matrix material and filaments by subjecting to heat and pressure. According to page 19, lines 10-12, the pressure used may range from 10 psi to about 10,000 psi. Thus, Li describes that a combination of heat and pressure is necessary in order to form the desired composite, i.e., a composite in which the filaments are embedded within the matrix material. The use of pressure in combination with elevated temperature is thus indispensably required in Li. In contrast, in conjunction with the clear understanding one of ordinary skill in the art would have in reading the present disclosure, claim 21 limits the heat treatment step to only heat treatment. Such a mere heat treatment, for example in the absence of elevated pressure, is not taught or suggested by Li.

Claim 21 recites that the fabric following the heat treatment in step e) consists essentially of a non-composite network of the water-repellent agent treated aramid yarns. That is, no composite is produced, contrary to Li, which teaches that the heat and pressure treatment results in a composite in which the filaments are embedded in the matrix material. In the present application, the aramid fabric is hydrophobically finished, and the finish does

not act as a matrix as required in Li. For example, as set forth on page 16, lines 5-8 of Li, the major criterion of the matrix material therein is that it hold the filaments together and maintain the geometrical integrity of the composite during use. It is clear that the water-repellent agent applied in step b) will not fulfill this criterion and will not hold the filaments together.

C. Conclusion

For at least the foregoing reasons, Applicants respectfully submit that Li fails to teach or suggest the method of claim 1 or any of the claims dependent therefrom. Reconsideration and withdrawal of this rejection are respectfully requested.

V. Rejections Under 35 U.S.C. §103(a)

A. Li in View of Kwolek

Claim 2 was rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Li in view of U.S. Patent No. 3,671,542 (hereinafter Kwolek). This rejection is respectfully traversed.

The Patent Office relied upon Kwolek as allegedly teaching that poly(p-phenylene terephthalamide) is prepared by a spinning process into a coagulating bath, followed by a wash bath and drying. The Patent Office cited Example 1 of Kwolek.

However, Kwolek, including Example 1, merely pertains to compositions or dopes of optically anisotropic aromatic polyamide for fiber preparation. Nowhere does Kwolek remedy the significant deficiencies of Li discussed above.

Accordingly, Applicants respectfully submit that even if the teachings of Li and Kwolek were to have been combined as alleged in the Office Action, the presently claimed methods still would not have been achieved. Reconsideration and withdrawal of this rejection are thus respectfully requested.

B. Li Alone

Claims 6, 9-13 and 15-17 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Li.

For all the same reasons discussed extensively above, Li fails to teach or suggest the presently claimed methods, in particular failing to teach or suggest a method of producing a hydrophobically finished aramid fabric that includes the step of heat treating the fabric as recited in present claim 1.

Moreover, with regard to dependent claim 16, Applicants strenuously disagree with the Patent Office's assertion that adjusting the heat treatment time in Li to be between 30 and 120 seconds would have been obvious as requiring no more than routine experimentation. As was discussed above, Li requires a step of consolidating and heat setting the matrix material of the composite, which requires a sufficient amount of time to permit the matrix materials to fully flow around the high strength filaments. Example 1 of Li requires 40 minutes for this procedure. In view of the very different results sought to be achieved in Li (the formation of a composite of multiple layers), it is clearly without merit to assert that it would have been obvious to adjust the step to be between 30 and 120 seconds. Nothing in Li teaches or suggests that the formation of the composite could be adequately achieved in such a short consolidation and heat setting time.

Still further, with respect to dependent claim 17, Applicants submit that Li requires the matrix material therein to comprise at least about 10% by weight of the composite. See Li at page 18, lines 29-38. Li would not teach or suggest using as little matrix material as recited in claim 17, as such little amount of matrix material would not be sufficient to form the composite required in Li.

For the foregoing reasons, Applicants respectfully submit that one of ordinary skill in the art would not have been led to the presently claimed methods from the teachings of Li. Reconsideration and withdrawal of this rejection are respectfully requested.

C. Li in view of Stephenson

Claim 5 was rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Li in view of WO 92/01108 (hereinafter "Stephenson"). This rejection is respectfully traversed.

First, it is unclear whether or not the teachings of Jakob et al. are included in the rejection. Jakob et al. is not recited in the statement of the rejection, but is discussed in the body of the rejection (paragraph 10 of the Office Action).

Regardless, Applicants respectfully submit that none of Li, Stephenson or Jakob et al. teach or suggest the presently claimed methods.

Stephenson pertains to a method for improving the hydrolytic resistance of aramid fiber. Jakob et al. describes a fluoropolymer from the range OLEOPHOBOL in combination with an oxime blocked polyisocyanate extender of the range HYDROPHOBOL.

Here again, neither Stephenson nor Jakob et al. teach or suggest a method for producing a hydrophobically finished aramid fabric comprising applying a water-repellent agent to the aramid yarn, drying the aramid yarn, forming a fabric from the aramid yarn, and then heat treating such fabric as required in present claim 1.

For the foregoing reasons, Applicants respectfully submit that none of Li, Stephenson or Jakob et al., whether taken singly or in any combination, would have led one of ordinary skill in the art to the presently claimed methods. Reconsideration and withdrawal of this rejection are respectfully requested.

VI. Rejoinder

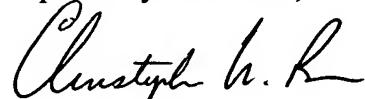
Presently withdrawn claims 18 and 19 depend from present claim 1. Accordingly, Applicants respectfully submit that upon allowance of claim 1, claims 18 and 19 should be rejoined with the application and similarly allowed.

VII. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-21 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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